AMENDMENT TO THE CLAIMS

1. (Currently Amended) A method of equalizing light propagation differences in at least two spaced optical beam pathways in a polarization medium comprising:

directing a first optical beam in a forward direction in a first pathway, and directing the first optical beam in a reverse direction in a second optical pathway; ~~and~~

directing a second optical beam in a forward direction in the second pathway, and directing the second optical beam in a reverse direction in the first optical pathway; and

disposing a variable polarization control device in at least one of the first pathway and the second pathway so that light propagation differences in the polarization medium of the device are equalized.

2. (Currently Amended) An optical processing apparatus comprising:

a beam splitter for splitting an optical beam to produce a first beam portion and a second beam portion;

a first bi-directional pathway for conducting the first beam portion;

a second bi-directional pathway for conducting the second beam portion; ~~and~~

a beam redirecting means for redirecting the first beam portion back along the second bi-directional pathway and for redirecting the second beam portion back along the first bi-directional pathway; and

a variable polarization control device disposed in at least one of the first bi-directional pathway and the second bi-directional pathway.

3. (Original) The optical processing apparatus of claim 2, wherein the beam splitter comprises a beam displacement prism.

4. (Original) The optical processing apparatus of claim 2, wherein the beam redirecting means comprises a total internal reflection prism.

5. (Original) The optical processing apparatus of claim 2, wherein the beam redirecting means comprises a mirror.

6. (Original) The optical processing apparatus of claim 5, wherein the beam redirecting means further comprises a lens for directing the first beam portion and second beam portion to the mirror.

7. (Original) The optical processing apparatus of claim 5, wherein the beam directing means further comprises a path length compensator disposed in at least one of the first beam portion and the second beam portion.

8. (Original) The optical processing apparatus of claim 2, further comprising a half wavelength plate disposed in at least one of the first beam portion and the second beam portion between the beam splitter and the beam redirecting means.

9. (Currently Amended) The optical processing apparatus of claim 2, ~~further~~ wherein the variable polarization control device ~~comprising~~ comprises a first acousto-optical device disposed in the first bi-directional pathway and a second acousto-optical device disposed in the bi-directional optical pathway.

10. (Currently Amended) The optical processing apparatus of claim 9, wherein the first acousto-optical device and the second acousto-optical device comprise a single device.

11. (Currently Amended) The optical processing apparatus of claim 2, wherein the variable polarization control device comprises ~~further comprising~~ a liquid crystal light valve ~~disposed in at least one of the first bi-directional pathway and the second bi-directional pathway~~.

12. (Original) The optical processing apparatus of claim 2, further comprising an optical circulator for conducting the optical beam to the beam splitter and redirecting a processed beam returned from the beam splitter.

13. (Original) The optical processing apparatus of claim 12, further comprising a fiber grin lens disposed in the optical beam between the circulator and the beam splitter.

14. (Original) An optical processing apparatus comprising:

a beam splitter for splitting a light beam to produce a first beam and a second beam;

an acousto-optical device comprising a first bi-directional pathway for conducting at least a portion of the first beam and a second bi-directional pathway for conducting at least a portion of the second beam; and

a beam reflector disposed adjacent the acousto-optical device and configured to reflect the at least a portion of the first beam back along the second bi-directional pathway and for redirecting the at least a portion of the second beam back along the first bi-directional pathway.

15. (Original) The optical processing apparatus of claim 14, wherein the beam reflector comprises a total internal reflection prism.

16. (Original) The optical processing apparatus of claim 14, wherein the beam reflector comprises a mirror.

17. (Original) The optical processing apparatus of claim 16, wherein the beam reflector further comprises a lens for directing the at least a portion of the first beam and at least a portion of the second beam to the mirror.

18. (Original) The optical processing apparatus of claim 16, wherein the beam reflector further comprises a path length compensator disposed in at least one of the at least a portion of the first beam and at least a portion of the second beam.